

# STUDENT PRESENTATION

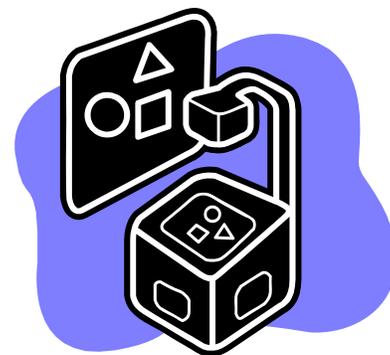
During our upcoming meeting on May 22nd one of our past SCC Ontario scholarship honorees Ms Fan (Cendy) Wang will do a short presentation on her recent work titled **“The Sub- $\alpha$  Gel Phase of Monoglyceride-Water system and its effect on Emulsion Stability”**

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Current research in our laboratory focuses on the development of petroleum-free, high oil content cosmetic emulsion structured with glycerol monoglycerides (MGs).

MGs are commonly used food emulsifiers, as they can structure both liquid oil and water by forming lamellar structures. MGs show polymorphic and mesomorphic behavior, where a high water swelling capacity can be achieved in the metastable  $\alpha$ -gel phase. While characterizing the stability of the  $\alpha$ -gel phase of MG-water gels, a thermal transition at  $\sim 13^{\circ}\text{C}$  was observed. The nature of this thermal transition in a system consisting of 20% (w/w) glyceryl monostearate:sodium stearyl lactylate (GMS:SSL, 19:1) in water (MG-gel) was studied by differential scanning calorimetry (DSC) and X-ray diffraction (XRD). Simultaneous powder XRD-DSC was also used to characterize the crystalline structure of the MG-gel in the temperature range from 1 to  $75^{\circ}\text{C}$ . Results demonstrated that the melting peak at  $\sim 13^{\circ}\text{C}$  corresponded to the transformation of the sub- $\alpha$  gel phase to the  $\alpha$  gel phase.

The stability of an oil-in-water emulsion structured by this MG-gel was also studied in this work. Results suggested that the addition of hydrocolloids, specifically xanthan gum, successfully increased the stability of the emulsion. Two potential mechanisms contribute to this stabilization. Firstly, xanthan gum increases the viscosity of the water phase. Secondly, since xanthan gum is an anionic polymer, it repels the MG lamellae containing the anionic co-surfactant SSL. This slows down the natural tendency for the lamellae to pack more closely and expel water, thus increasing emulsion stability an order of magnitude.



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Comprised of over 4,000 members, the Society of Cosmetic Chemists was founded in 1945 to promote high standards of practice in the cosmetic sciences. We serve as a focus and provide the proper forums for the exchange of ideas and new developments in cosmetic research and technology.

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